

Exhibit A



Product Specification

ISSUE DATE:

September 28, 1999

REVISION NUMBER:

PAGE:

1 OF 1

MASTER COPY RETIRED
PRODUCT NAME: BETASTAB® 10A
DATE: 8/16/03

MASTER COPY

SWH (Initials)

Statement of Conformance

BetaTec, G.m.b.H., guarantees that all lots of BetaStab® 10A produced after the Issue Date meet these Product Specifications.

Description

BetaStab® 10A is an aqueous, alkaline solution of the potassium salts of beta-acids. It is produced from a CO₂ extract of hops and is intended for use as an anti-bacterial agent in food process industries.

Storage

BetaStab® 10A should be stored at 5° - 15°C (41°-59°F) in original airtight containers.

Regulatory Information

BetaStab® 10A is an unmodified fraction of hop extract, namely unmodified beta-acids, formulated as a 10% solution of the potassium salts of the beta-acids. Unmodified hop extracts and unmodified fractions thereof are considered GRAS (Generally Recognized As Safe) by the FDA under regulation 21 CFR 182.20.

<u>Characteristic</u>	<u>Specification</u>	<u>Method</u>
Appearance:	Amber to brown solution (some precipitate may occur in storage)	not applicable
Identification (HPLC):	meets test	HPLC
Assay, As beta-acids	9.5% - 10.5%	HPLC
pH	10 - 11.5	pH meter
Heavy Metals:	less than 20 ppm	FCC test
Lead:	less than 5 ppm	atomic absorption

APPROVAL SIGNATURES

David Hysert

DATE

9/28/99John H. Mills

DATE

9/28/99



PRODUCT SPECIFICATION

MASTER COPY
8/6/03
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ISSUE DATE:

January 6, 2000

REVISION NUMBER:

1

PAGE:

1 OF 1

PRODUCT NAME:

HEXAHOP GOLD™ (10%)

MASTER COPY

hjh/ (initials)

Statement of Conformance

Haas Hop Products, Inc. guarantees that all lots of Hexahop Gold™ produced after the Issue Date meet the Product Specifications.

Description

Hexahop Gold™ is an aqueous, alkaline solution of the potassium salts of tetrahydro-iso- α -acid (THIAA) and hexahydro-iso- α -acid (HHIAA). It is produced from a CO₂ extract of hops and is intended for use in beer or other food products.

Storage

Hexahop Gold™ should be stored at 15° - 25°C (60° - 75°F).

Regulatory Information

Hexahop Gold™ is classified by the U.S. FDA as a modified hop extract which may be safely used in beer in accordance with regulation 21CFR 172.560(b)(6) and (7).

<u>Characteristic</u>	<u>Specification</u>	<u>Method</u>
Appearance:	yellow to amber liquid	not applicable
Identification (HPLC):	meets test	HPLC
Assay, as THIAA and HHIAA by UV (w/w):	9.5% - 10.5%	HHP UV method
Ratio of HHIAA/THIAA by HPLC area:	1.0 - 1.2	calculated, HPLC
pH:	8.5 - 11.0	pH meter
Boron:	less than 300 ppm	atomic absorption
Heavy Metals:	less than 20 ppm	FCC test
Lead:	less than 5 ppm	atomic absorption

APPROVAL SIGNATURES

David Hyatt

DATE

1/7/00

John Phillips

DATE

1/10/00



PRODUCT SPECIFICATION

ISSUE DATE:

June 26, 2002

REVISION NUMBER:

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PAGE:

1 OF 1

PRODUCT NAME:

HEXAHOP GOLD® (10%) (HPLC)

MASTER COPY

(Initials)

Statement of Conformance

Haas Hop Products, Inc. guarantees that all lots of Hexahop Gold® produced after the Issue Date meet the Product Specifications.

Description

Hexahop Gold® is an aqueous, alkaline solution of the potassium salts of tetrahydro-iso- α -acid (THIAA) and hexahydro-iso- α -acid (HHIAA). It is produced from a CO₂ extract of hops and is intended for use in beer or other food products.

Storage

Hexahop Gold® should be stored at 15°- 25°C (60°-75°F).

Regulatory Information

Hexahop Gold® is classified by the U.S. FDA as a modified hop extract which may be safely used in beer in accordance with regulation 21CFR 172.560(b)(6) and (7).

<u>Characteristic</u>	<u>Specification</u>	<u>Method</u>
Appearance:	yellow to amber liquid	not applicable
Identification (HPLC):	meets test	HPLC
Assay, as THIAA and HHIAA by HPLC(w/w): ICS-T1 and DCHA-Hexa, ICS-H1 standards)	9.5% - 10.5%	HHP HPLCmethod (Tetra,
Ratio of HHIAA/THIAA	1.0 - 1.2	calculated, HPLC
pH:	8.5 - 11.0	pH meter
Boron:	less than 300 ppm	atomic absorption
Heavy Metals:	less than 20 ppm	FCC test
Lead:	less than 5 ppm	atomic absorption

APPROVAL SIGNATURES

DATE June 26, 2002

DATE

6/26/02



PRODUCT SPECIFICATION

ISSUE DATE:

April 8, 1999

REVISION NUMBER:

PAGE:

1 OF 1

PRODUCT NAME:

ISOHOP®

MASTER COPY

8/2/99 (initials)

Statement of Conformance

Haas Hop Products, Inc. guarantees that all lots of Isohop® produced after the Issue Date meet the Product Specifications.

Description

Isohop® is an aqueous, alkaline solution of the potassium salt of iso- α -acid. It is produced from a CO₂ extract of hops and is intended for use in beer or other food products.

Storage

Isohop® should be stored at 2°- 8°C (35°-45°F).

Regulatory Information

Isohop® is classified by the U.S. FDA as a modified hop extract which may be safely used in beer in accordance with regulation 21CFR 172.560(b)(2-5).

<u>Characteristic</u>	<u>Specification</u>	<u>Method</u>
Appearance:	yellow to amber liquid	not applicable
Identification (HPLC):	meets test	HPLC
Assay, as iso- α -acids by UV(w/w):	29.5% - 30.5%	HHP UV method
pH:	8.5 - 9.5	pH meter
Heavy Metals:	less than 20 ppm	FCC test
Lead:	less than 5 ppm	atomic absorption

APPROVAL SIGNATURES

David Hyatt

DATE

5/19/99

John Phillips

DATE

6/24/99



PRODUCT SPECIFICATION

ISSUE DATE:

April 8, 1999

REVISION NUMBER:

PAGE:

1 OF 1

PRODUCT NAME:

REDIHOP®

MASTER COPY

(Initials)

Statement of Conformance

Haas Hop Products, Inc. guarantees that all lots of Redihop® produced after the Issue Date meet the Product Specifications.

Description

Redihop® is an aqueous, alkaline solution of the potassium salt of rho-iso- α -acid. It is produced from a CO₂ extract of hops and is intended for use in beer or other food products.

Storage

Redihop® should be stored at 15°- 25°C (60°-75°F).

Regulatory Information

Redihop® is classified by the U.S. FDA as a modified hop extract which may be safely used in beer in accordance with regulation 21CFR 172.560(b)(1).

<u>Characteristic</u>	<u>Specification</u>	<u>Method</u>
Appearance:	reddish to amber liquid	not applicable
Identification (HPLC):	meets test	HPLC
Assay, as Rho-iso- α -acids by UV (w/w):	34.5% - 35.5%	HHP UV method
Assay, Iso- α -acids by HPLC:	less than 0.2%	HPLC
pH:	8.5 - 9.5	pH meter
Boron:	less than 310 ppm	atomic absorption
Heavy Metals:	less than 20 ppm	FCC test
Lead:	less than 5 ppm	atomic absorption

APPROVAL SIGNATURES

David Hyatt

DATE

5/19/99

John H. H. H.

DATE

6/24/99



PRODUCT SPECIFICATION

PRODUCT NAME: **TETRAHOP GOLD™**

ISSUE DATE:

June 30, 1999

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1 OF 1

MASTER COPY

(Initials)

Statement of Conformance

Haas Hop Products, Inc. guarantees that all lots of Tetrahop Gold™ produced after the Issue Date meet the Product Specifications.

Description

Tetrahop Gold™ is an aqueous, alkaline solution of the potassium salt of tetrahydro-iso- α -acid. It is produced from a CO₂ extract of hops and is intended for use in beer or other food products.

Storage

Tetrahop Gold™ should be stored at 15° - 25°C (60° - 75°F).

Regulatory Information

Tetrahop Gold™ is classified by the U.S. FDA as a modified hop extract which may be safely used in beer in accordance with regulation 21CFR 172.560(b)(6).

<u>Characteristic</u>	<u>Specification</u>	<u>Method</u>
Appearance:	yellow to amber liquid	not applicable
Identification (HPLC):	meets test	HPLC
Assay, as tetrahydro-iso- α -acids by UV (w/w):	9.6% - 10.4%	HHP UV method
pH	8.5 - 11.0	pH meter
Heavy Metals:	less than 20 ppm	FCC test
Lead:	less than 5 ppm	atomic absorption

APPROVAL SIGNATURES

David Hyatt

DATE

June 30, 1999

John White

DATE

July 1, 1999



PRODUCT SPECIFICATION

ISSUE DATE:

January 6, 2000

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NEW

PAGE::

1 OF 1

PRODUCT NAME:

ALPHAHOP[®]COPY RETIRED EFFECTIVE
DATE: 8/6/03

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(initials)

Statement of Conformance

Haas Hop Products, Inc. guarantees that all lots of Alphahop[®] produced after the Issue Date meet these Product Specifications.

Description

Alphahop[®] is the α -acid fraction of CO₂ hop extract that has been extracted with alkaline water to isolate the α -acids from the β -acids, hop oils and uncharacterized resins. It is intended for use in beer or other food products.

Storage

Alphahop[®] should be stored below 5°C (41°F). If desired, Alphahop[®] may also be stored colder without risk to product quality.

Regulatory Information

Alphahop[®] is classified by the U.S. FDA as a hop or hop extract and is therefore considered GRAS (generally recognized as safe) in accordance with regulation 21 CFR 182.20.

<u>Characteristic</u>	<u>Specification</u>	<u>Method</u>
Appearance:	yellow to amber, semi-solid paste	not applicable
Identification (HPLC):	meets test	HPLC
Assay,		
iso- α -acids by HPLC	not more than 5%	HPLC, DCHA-IAA
α -acids by HPLC:	greater than 80%	HPLC, ICE-2
β -acids by HPLC:	not more than 5%	HPLC, ICE-2
Heavy metals:	less than 20 ppm	FCC test
Lead:	less than 5 ppm	AA

APPROVAL SIGNATURES

David Hyatt
John Phillips

DATE

1/7/00

DATE

1/10/00



**DEALER HOPS GROWER
PROCESSOR**

JOHN I. HAAS, INC.

**SUITE 510
1615 L STREET, N.W.
WASHINGTON, D.C. 20036
TELEPHONE: (202) 223-0005
TELEFAX: (202) 955-5742
TELEX: 248325**

John I. Haas, Inc. acquires Cultor Food Science Brewing Ingredients

Washington DC, December 4, 1997—Haas Hop Products, Inc., a newly formed subsidiary of John I. Haas, Inc. of Washington DC, has purchased the Brewing Ingredient business of Cultor Food Science, Inc. of Ardsley, New York.

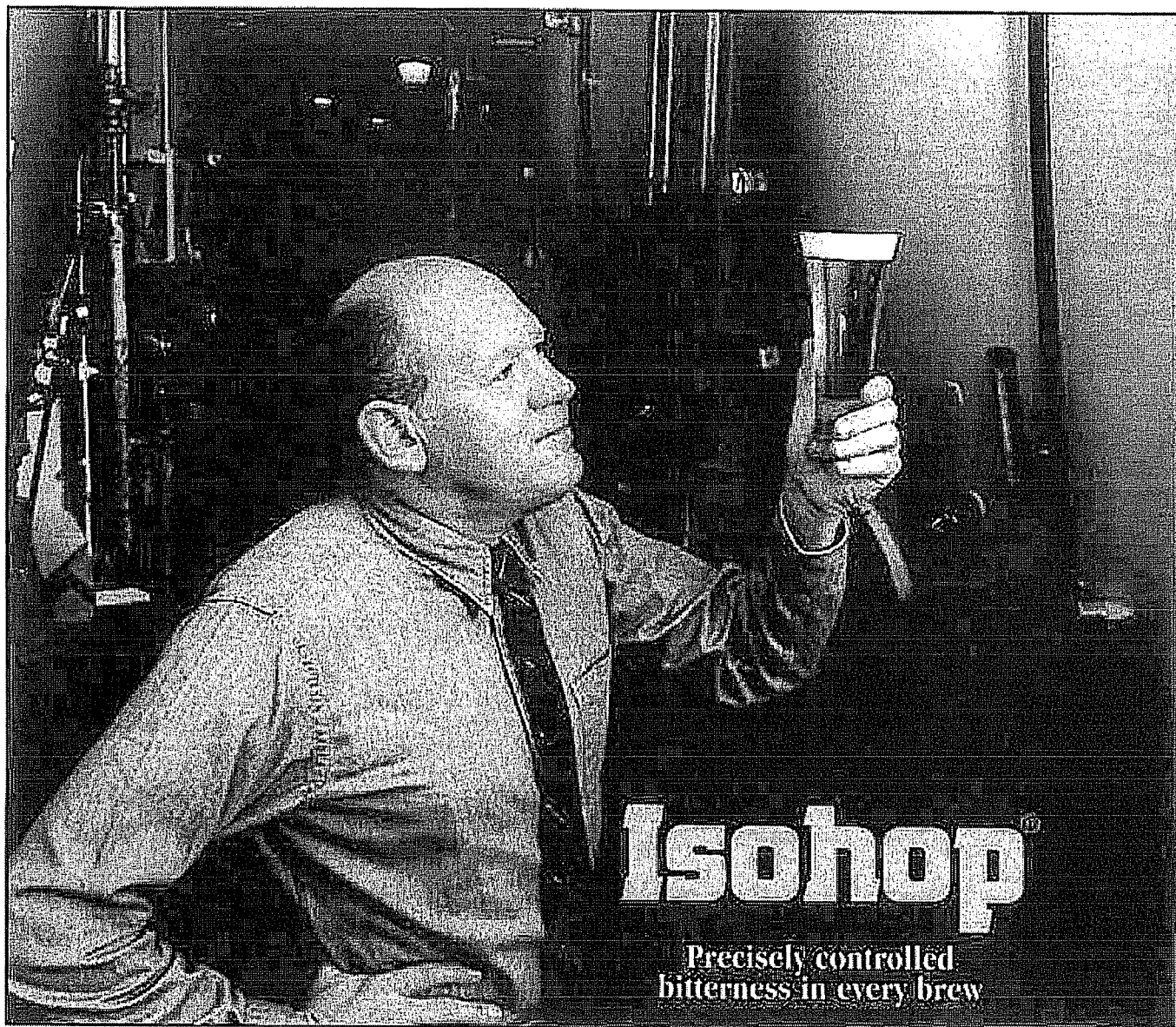
Assets included in the sale are the ingredients Tetrahop®, Aromahop®, Isohop®, Redihop®, and CO₂ hop extract as well as the CO₂ extraction facility in Sidney, Nebraska, and the business' R&D capabilities. Terms of the agreement will not be disclosed. Personnel employed by the Cultor business have become employees of Haas. Haas will operate sales offices of the acquired business in Milwaukee, Prague, Brussels, São Paulo and Hong Kong and, in addition, will have sales representation in China.

John I. Haas, Inc. is an industry leader in hop growing, processing and technology. "The purchase of Cultor Food Science's brewing products business allows us to enhance our own product line and meet increasing demand for CO₂ hop extracts. We are also pleased to add the excellent Cultor research and development capabilities to the Haas Group," said Henry von Elchel, Chairman, President and Chief Executive Officer of John I. Haas, Inc.

According to Carlo W. Colesanti, President Flavor Division, Cultor Food Science, "This divestiture moves Cultor's brewery business into an organization with a compatible strategic vision, but one which will focus more resources on the products and allow them to flourish. At the same time, the Flavor Division has further refined its emphasis which is flavor development for the global food and beverage industry."

Cultor Food Science, developer and marketer of unique, high performance food ingredients, is a business sector within Cultor Corporation, headquartered in Helsinki, Finland, an international research-based and market-driven organization focused on nutrition.

For further information, please contact John Melville, Exec. Vice President Corporate Affairs of John I. Haas, at (202) 223-0005.



Using Cultor's liquid CO₂ technology, Isohop® gives you precise control of the pure bitter flavor of the hops.

Use Isohop to economically add bitterness through post-fermentation injections into beer, particularly when high-gravity brewing practices are utilized. Isohop also allows for greater flexibility in brewing different brands through post-fermentation bitterness adjustments.

Isohop

Controlled beer bitterness shows up in flavor.

Isohop is a highly purified solution of isoalpha acids subjected to rigid in-process testing under strict quality control standards. Because Isohop is a purified product, it produces a cleaner bitterness. Product specifications and certificate of analysis are available with every lot.

Isohop

More economical to ship, store and handle.


One 20-liter container of Isohop will hop as much beer as two hop bales or eight boxes of hop pellets.

 **CULTOR**
Food Science

Isohop[®]

A post-fermentation hop concentrate for precise control of beer bitterness.

Description

 Isohop is an aqueous, alkaline solution of isoalpha acids standardized at 30% w/v by UV. Isohop is produced from a liquid CO₂ hop concentrate and is isomerized in a totally aqueous system.

Storage and Handling

Isohop should be stored under refrigerated conditions (2-8° C) to ensure product quality.

Use Rate Calculations

Measure the required amount of Isohop according to the following formula:

A) For hectoliters of beer

Kg of hop product =

$$\frac{(\text{BU of finished beer})(\text{HI of finished beer})}{(0.30)(\text{utilization})(10,000)}$$

1 barrel = 1.1734 HI

Use rates may vary depending on the point of injection and desired hopping level. Consult a Cultor representative regarding your particular application.

Injection Method

Cultor recommends the direct, undiluted injection of Isohop into the beer stream.

The ideal injection site for Isohop is after primary filtration and water rectification, as the beer is being transferred to a finishing tank. Cultor recommends a final filtration of the beer after the addition of Isohop.

The Isohop solution is best proportioned into the beer over a minimum of 70% of the beer transfer time. A 2-3mm ID dip tube in the middle of the beer line provides excellent dispersion.

Note: Isohop injections should be made with a positive displacement pumping system. CO₂ back pressure should not be used, as it will lower the pH of the injection solution and adversely affect the functionality of the Isohop.

Packaging

Isohop is packaged in 45-lb. deltangular containers, 1,440 lbs./pallet.

Assays

UV assays are available upon request for the measurement of isoalpha acids in Isohop and beer. Isohop conforms to FCC/Food Grade Standards.



For technical assistance and additional information, please contact:

In the USA

Cultor Food Science
4215 North Port Washington Avenue
Milwaukee, Wisconsin 53212
Phone (414) 332-3545
FAX (414) 332-6045
Toll Free (in the USA) 1-800-231-1590

In Europe

Cultor Food Science Belgium S.A.
102 Rue Léon Théodor
1090 Brussels Belgium
Phone 32-2-421-1961
FAX 32-2-421-1962

In Asia/Australia

Cultor Food Science
c/o Pfizer Pty Ltd
38-42 Wharf Road
West Ryde NSW 2114
AUSTRALIA
Phone 612-9850-3509
FAX 612-9804-6204

In Japan

Cultor Food Science K.K.
2-3-22, Toranomon
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Phone 81-3-3503-0441
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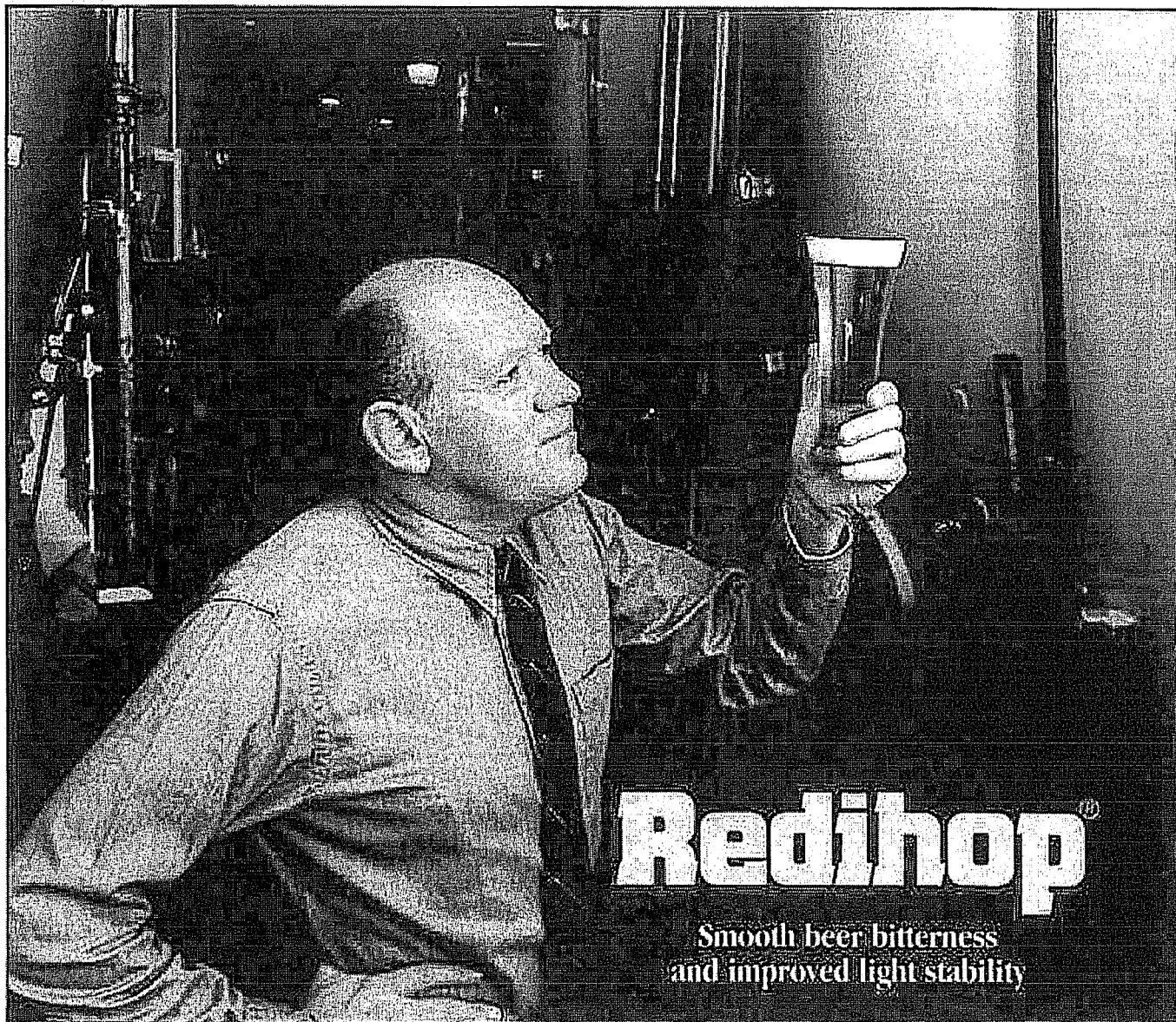
In Hong Kong

Cultor Food Science B.V.
Flat A, 3/A Tsuen Wan International Centre
58-70 Wang Lung Street, Tsuen Wan
New Territories, Hong Kong
Phone 852-24098182
Fax 852-24098390

In South America

Cultor Food Science
Av. Pres. Tancredo Neves, 1111
07190-160 Guarulhos, SP
BRAZIL
Phone 55-11-964-7549
FAX 55-11-964-7550

BH096039



Smooth Beer Bitterness

Redihop® contributes smooth bitterness and light stability providing an opportunity for creatively packaging an excellent beer. Redihop in combination with Tetrahop® allows the brewer to further diversify their production of high-quality, light-stable beer.

Smooth bitterness shows up in flavor.

Redihop is a highly purified solution of reduced isoalpha acids subject to rigorous in-process testing against

strict quality control standards. Redihop produces a smoother bitterness with less after-bitter, making it ideal for light or reduced-calorie beers. Product specifications and certificates of analysis are available with every lot.

A light-stable concentrate.

Redihop inhibits the development of hop related sunstruck character in beers creatively packaged in green or clear bottles.

 **CULTOR**
Food Science

Redihop[®]

*An essential ingredient for smooth bitterness and light stability,
to produce a premium beer.*

Description

Redihop is an aqueous, alkaline solution of reduced isoalpha acids standardized at 35% Ww by UV. Redihop is produced from liquid CO₂ extract of hops which is isomerized and reduced in a totally aqueous system.

Storage and Handling

Redihop should be stored at room temperature.

Redihop may precipitate during storage. The precipitate can be readily re-dissolved by heating the containers in a water bath to 40-60°C.

Use Rates Calculations

Weigh out the required amount of Redihop according to the following formula:

Lbs. of Redihop required per 100 U.S. barrels of finished beer = $0.114 \times \text{BU's desired}$, or

Kg of Redihop required per 100 hl of finished beer = $0.044 \times \text{BU's desired}$.

Example: Desired BU = 15.

Finished beer volume = 1000 bbls. (1173 hl).

Redihop required = 17.1 lbs. (7.75 kg).

Use rates may vary depending on the point of injection and the desired hopping level. Consult a Cultor representative regarding your particular application.

Injection Methods

Cultor recommends the direct, undiluted injection of Redihop into the beer stream.

The ideal injection site for Redihop is after primary filtration and water rectification as the beer is being transferred to a finishing tank. Cultor recommends a final filtration of the beer after the addition of Redihop.

The Redihop solution should be proportioned into the beer over a minimum of 70% of the transfer time. A 2-3mm ID dip tube in the middle of the beer line provides excellent dispersion.

Note: Redihop injections should be made with a positive displacement pumping system. CO₂ back pressure should never be used, as it will lower the pH of the injection solution and adversely affect the functionality of the Redihop.

Packaging

Redihop is provided in 45-lb. (5-gallon) deltangular containers, 1,440 lbs./pallet.

Assays

UV assays are available upon request for the measurement of reduced isoalpha acids in Redihop and beer. Redihop conforms to FCC/Food Grade Standards.



For technical assistance and additional information, please contact:

In the USA

Cultor Food Science
4215 North Port Washington Avenue
Milwaukee, Wisconsin 53212
Phone (414) 332-3545
FAX (414) 332-6045
Toll Free (in the USA) 1-800-231-1590

In Europe

Cultor Food Science Belgium S.A.
102 Rue Léon Théodor
1090 Brussels Belgium
Phone 32-2-421-1961
FAX 32-2-421-1962

In Asia/Australia

Cultor Food Science
c/o Pfizer Pty Ltd
38-42 Wharf Road
West Ryde NSW 2114
AUSTRALIA
Phone 612-9850-3509
FAX 612-9804-6204

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Av. Pres. Tancredo Neves, 1111
07190-160 Guarulhos, SP
BRAZIL
Phone 55-11-964-7549
FAX 55-11-964-7550

Tetrahop[®]

**Now improved foam, enhanced cling and light-stable beer
from a pure extract of hops**

Tetrahop from CULTOR Food Science, Inc. is a highly purified solution of hop bitter acids. Cultor produces Tetrahop exclusively from a liquid CO₂ concentrate of hops in an all aqueous process. This assures a high quality product, free of

solvent residues. Cultor's innovative aqueous process makes all the difference. The benefits to the brewmaster are:

- Light stable beer
- Improved foam stand
- Enhanced foam cling



CULTOR

Food Science

Brewery Ingredients Division

4215 N. Port Washington Road, Milwaukee, WI 53212

Phone (414) 332-3545 • Toll Free (800) 231-1590 • FAX (414) 332-6045

Tetrahop[®]

Offers the brewer the opportunity to improve a good beer to an excellent beer.

A Light-Stable Concentrate

Tetrahop is stable to ultraviolet light and will not promote the development of "sunstruck" flavors. This is a major advantage for beer packaged in green or clear bottles. In any package, Tetrahop will offer enhanced flavor stability.

Enhanced Foam Stand and Cling Properties

When used in the brewing process, Tetrahop enhances foam stand and cling. Even at relatively low concentrations of 4-5 ppm, foam stand and cling are significantly enhanced while maintaining the beer's characteristic flavor.

Enhanced Bitterness

Because of enhanced bitterness qualities, Tetrahop contributes about 1.6-1.8 times the bitterness per BU when compared to isoalpha acids. Less Tetrahop is required to achieve the same level of bitterness as in beer hopped with other products.

The Assurance of Cultor's Quality Standards

Tetrahop is subject to rigorous in-process testing against strict quality control standards. Certificates of analysis are available with each lot.

Description

Tetrahop is an aqueous, alkaline solution of tetrahydroisoalpha acids standardized at 10% w/v by UV. Tetrahop is produced from a liquid CO₂ extract of hops in an all-aqueous process.

Packaging

Tetrahop is packaged in 20-liter deltangular containers, 640 liters/pallet.



Storage and Handling

Tetrahop should be stored at room temperature (20-25°C).

Use Rate

Adding one liter of Tetrahop to 100 hl of finished beer will give a BU increase of five that will have a flavor of eight.

Use rates will vary depending on your brewing process. Contact your Cultor representative for calculation of the specific use rate for your application.

Addition

The ideal addition point for Tetrahop is after primary filtration and water rectification as the beer is being transferred into a finishing tank. Cultor recommends a final filtration of the beer after the addition of Tetrahop.

Tetrahop should be proportioned into the beer stream using a positive displacement pumping system over a minimum of 70% of the transfer time. A 2-3mm ID dip tube in the middle of the beer line provides excellent dispersion.

Cultor recommends adding Tetrahop as a direct, undiluted injection. Tetrahop should be heated to 55-60° C prior to direct injection. Please refer to Cultor's technical data sheets for detailed injection instructions or consult your Cultor technical representative.

Assay Method

The UV method for measurement of tetrahydroisoalpha acids is available upon request. Tetrahop conforms to FCC/Food Grade Standards.



For technical assistance and additional information, please contact:

In the USA

Cultor Food Science
4215 North Port Washington Avenue
Milwaukee, Wisconsin 53212
Phone (414) 332-3545
FAX (414) 332-6045
Toll Free (in the USA) 1-800-231-1590

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